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ABSTRACT

A study examined the effects of teachers' use of explicit explanation on students' levels of metacognitive awareness of the reading process and on their reading achievement as measured by a standardized test. Subjects, 22 fifth grade teachers from 13 different elementary schools, were observed by researchers who had been trained in using a management observation form. After rating the teachers as high, medium, or low classroom managers, the researchers then randomly assigned each to a treatment or control condition. Teachers in the treatment condition were trained to use explicit explanation during reading instruction, and those in the control condition were trained in classroom management techniques. All teachers were asked to incorporate what they had learned into their classroom lessons with low reading students. The students in all classes were tested previous to instruction using a standardized reading test and again following it. Results showed that the students of treatment condition teachers were more aware of what they had been taught than were students of control condition teachers. In addition, there was a significant positive relationship between teachers' explicit explanation and students' metacognitive awareness. (The criteria for evaluating teacher commmunication, a copy of the conventions for data analysis, and tables of data are appended.) (FL)

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A Study of the Relationship Between Teacher Explanation and Student Metacognitive Awareness During Reading Instruction*

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*Part of an on-going project on teacher explanation with Linda Vavrus, Roy Wesselman, and Joyce Putnam

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A Study of the Relationship Between
Teacher Explanation and Student Metacognitive
Awareness During Reading Instruction

Recent research about effective teaching (Brophy, 1979; Duffy, 1981), about instructional strategies for developing comprehension (Pearson, in press), and about how teachers influence what is learned (Brophy, 1982) have influenced interest in determining what teachers can say to directly influence students' awareness of what has been taught about the reading process and students' achievement on standardized reading tests.

Specifically, a program of research was designed to discover what teachers say during instruction to improve student reading outcomes. The original stimulus for the research was process-product studies of teacher effectiveness and the resulting concept of direct instruction, which Rosenshine (1976, 1979) characterized as essentially a matter of creating opportunity to learn by generating engagement on academic tasks. We, however, took the position that classroom teaching is more than opportunity to learn (Roehler & Duffy, 1982). A subsequent qualitative study (Duffy, Roehler, Reinsmoen, 1981) suggested that engagement is a prerequisite to effective instruction and that, beyond this foundation level, a crucial variable in instruction effectivenss is the explicitness of a teacher's verbal explanations to students. At about the same time, Anderson (in press) was conducting a study of student response to reading seatwork and noted that low group students in primary grades demonstrated little cognitive awareness regarding seatwork, apparently because teachers seldom gave them explicit directions about the cognitive processes to use. A pilot study and the current program of research were designed to determine whether teachers who provide explicit explanation about cognitive processing of skills produce more awareness in low group students and, ultimately, increase their achievement.

This research is based on certain assumptions about reading curricula and about instruction. First, our concept of reading curricula focuses more on skills (or process factors) than on the content of what is read. The importance of this distinction is stated by Pearson (in press):

> Process factors are comparable to what are called control procedures in computer processing. They refer to <u>how</u> data are produced instead of <u>what</u> data are processed. To discuss them in a paragraph separate from content factors may seem to imply that I think they are separate from and independent of content factors. To the contrary I know of no data base that would allow us to determine the independence of content (data) and process (control) factors. Process factors may be but different facets of the same amalgam under consideration when content factors are discussed.

While Pearson argues that content and process may be indistinguishable, we argue that skills embody the process which governs how reading works, that low group students must be aware of these skills so that reading does not remain an arbitrary and mysterious task and that the linkages between using skills and understanding content ought to be made explicit for such students. Hence, in contrast to projects which focus on the interpretation of a story content, such as the Kamahameha Early Education Program (Tharp, 1982) and the research of scholars such as Beck (Beck, Omanson & McKeown, 1982), we examine the reading skills which are to be used in interpreting stories. As such, we agree with Collins and Smith (1980):

> We do not argue that reading curricula should not stress interpretation. We argue only that a reading curricula should also try to teach how to construct interpretations...If we do not teach these skills, then the better students will develop them on their own, and the worse readers will find reading very frustrating (p. 28).

Second, we believe a relationship exists between student awareness and student achievement; that student reading achievement is higher if he/she is aware of how reading skills work, of how particular skills can be used to solve particular problems encountered in real text and of the mental processing employed when solving these problems. Consequently, it is not enough that a student master a skill in the sense of meeting a performance criterion. He/she must also know how, when he/she encounters a disruption in reading, to activate a metacognitive awareness of both the nature of the disruption and the skill(s) which can be brought to bear to resolve the difficulty so that a return to smooth and automatic processing can be quickly accomplished. It is this consciousness which puts the student in control of the reading process and allows him/her to read with confidence and ease.

Third, we believe instruction requires more than placing low group students in conducive environments in the expectation that they will discover for themselves the processes of reading and that it requires more than guiding their discovery by asking questions about content. Instead, we believe that a proactive, as opposed to an indirect approach, has the greatest potential for success. By proactive, we mean that teachers are themselves consciously aware of the function of the skills being taught and the linkages between these skills and the content to be processed; that they analyze the skill and identify the salient features of the mental processing one does when employing the skill; and that they actively teach students how to do the processing. This active role puts a premium on pedagogical maneuvering during instruction, particularly the teacher's declarative (as opposed to interrogative) statements, the clarity with which these are said and the assistance devices used to make the message as clear as possible. This view of instruction has much in common with Vygotsky's (Wertsch, 1979) theory of cognitive development through gradual internalization. At first, an adult or

adult-like person controls and guides the child's learning, particularly in what Vygotsky calls the "zone of proximal development" or that level of development immediately beyond what the child can currently do independently. Gradually, the child is moved from other-regulation to self-regulation by beginning with directions, moving to questions, and ending with supportive statements. Our concept of proactive instruction of reading skills is similar in that the teacher is responsible for providing other-regulated information about skills in the student's "zone of proximal development"; in that the teacher is quite active in early stages of other-regulation, engaging in pedagogical maneuvering designed to link this information with the student's existing cognitive structures regarding how one gets meaning from the printed page; and in that the teacher diminishes assistance, encourages self-regulation and looks for internalization of the process as the student begins to respond successfully.

Finally, we do not believe that such proactive instruction is a stable entity or procedure which can be scripted, packaged or otherwise established entirely in advance. While an advance plan is helpful, the pedagogical maneuvering with which we are concerned calls for verbal explanation in response to situations which arise during the lesson as well as those anticipated in advance. As such, it requires an understanding not only of how to initially present new information but of how students restructure information and how to reshape and elaborate on explanations in response to such restructuring.

The pilot study was conducted with four second and third grade teachers who were trained to use explicit explanations (see appendix A) while teaching low reading groups. After each observation of low reading groups, the students were interviewed regarding their understanding of what skill they had been taught, how they use the skill, and when they might use the skill again. The teacher's lesson was taped and the transcript was coded according to the conventions (see Appendix B). Similarly, the interviews with the students were

taped, transcribed and coded according to the conventions. The results indicated that there appears to be a direct positive relationship between ratings of teacher explanation and ratings of student awareness (see graphs in Appendix C). That is, the more explicit the teacher's explanation, the higher the students' scores on awareness.

A qualitative analysis of the teachers' explanation yielded some interesting characteristics about differences in the teachers' explanations which merited further study. The teacher's management which minimized interruption and maximized time on task characterized the teacher with the highest rating on explicit explanation. The second characteristic of the teacher with the highest ratings was the ability to reorder the format of the basal lesson, explaining the skill first, then using turn-taking patterns to practice and then applying the learned skill in the basal story. Third, the teacher with the highest scores included more explicit statements of why it was useful to learn the skill. Fourth, the more specific the teacher was in explaining the skill, the higher the students' awareness of how to use the skill. Fifth, the most successful teacher also was consistent in his explanation by reviewing and elaborating the lesson. Finally, the teacher provided elaborative and clarifying explanation during the turn-taking sessions when restructuring of the students comments warranted it (Duffy, Book, Roehler, 1982). Thus, the apparent relationship of the teacher's explanation and the student's awareness, as well as the qualitative difference of the teacher who had the highest rating on explanation behavior and the other teachers merits further study. In addition, the hypothesis that a teacher's explicit explanations were a significant factor in increasing student awareness, and, ultimately, their achievement was plausible enough to justify the current study.

Methods

While the purpose of the overall study is to compare the effect of teacher's use of explicit explanation with those who do not use explicit explanation on students' level of metacognitive awareness of the reading process and reading achievement as measured on a standard reading test, this paper will report the results of the following hypotheses:

1. Students of teachers who are trained to use explicit explanation in teaching reading will have more metacognitive awareness of the reading process than students of teachers who did not receive training.
2. There is a direct positive relationship between teacher explicit explanation and student metacognitive awareness.

Procedures

Twenty-two fifth grade teachers volunteered to participate from thirteen elementary schools. Four researchers were trained in using a management observation form (see Appendix D) and reliability of their ratings was ascertained by their rating of one teacher's management of a classroom. Each teacher in the study was observed for one hour by a researcher who rated the teacher's management skills and then was randomly assigned (by use of a table of random numbers) to treatment or control conditions. Of the teachers assigned to the treatment condition, 5 were high managers, 4 were medium, and 2 were low. Of the teachers in the control condition, 4 were high managers, 5 were medium, and 2 were low.

Students, identified in the low reading group of each class, were pretested using Level D. Form 2 of Gates-MacGinitie Reading Test (Second Edition). Most students were in the fifth grade, but other grade levels were included in those classes using the method of grouping students according to

reading levels regardless of grade level.

At the first training session all twenty-two teachers heard a brief introduction to the study and then were divided into the control and treatment groups. The control group participated in a workshop on classroom management conducted by a faculty member whose specialty is classroom management. The treatment group received information regarding the components of the explanation process, particularly how to task analyze the skills they wish to teach and how to put that thinking into the introduction of their lessons. They were asked to incorporate these components into their lessons and then to check their success in communicating this task analysis to students by having the students answer the questions "what was learned?," "why is it important?" and "how do I do the task?" These components were modeled by one of the researchers.

The second treatment was given one week later and the whole process of explicit explanation was discussed in greater detail. The teachers in this group talked about the problems they had in using the model and particular focus was given to the details of instructing, as well as how to restructure what students say in discussion to enhance their learning. Again the researcher modeled the whole explanation process.

The teachers in the treatment group were asked to design a skill lesson using explicit explanation which would be observed by the researchers. All teachers in both the control and treatment groups were observed for at least one hour, and at least five students from the low reading groups were interviewed after the lesson. Students were individually asked to respond to the following questions: "what did you learn?," "why is it important?," and "how do you do it?" The lessons, the researchers' field notes, and the interviews with the children were tape recorded and transcribed. In addition, the classroom management of each teacher was evaluated using the management rating form.

The transcribed lessons and interviews provided the basis for the next treatment in which the teachers in the treatment group were asked to recall the objectives of the lesson they had taught and how they would expect their students to answer the what, why, and how questions. They then discussed the transcript of their lessons with the researcher who had observed them and tried to identify the components of explicit explanation of their lesson. This treatment served to reinforce the process of explicit explanations.

All teachers were observed teaching skills to low group readers three additional times, and teachers in the treatment group were interviewed regarding their understanding and comfort in using the explicit explanation model. Students of the low reading group in each class were interviewed after each lesson observed. Students were retested on the Gates-MacGinitie Reading test seven months after the pre-tests.

Dependent Measures

Two raters were trained to use the criteria for analysis of the students interviews until they reached .80 interrater reliability. The raters rated the transcripts independently and then, as a pair, agreed upon a final rating. Twenty-five percent of the transcripts were randomly drawn and checked for adherence to the criterion. Ratings for awareness could range from zero to twelve.

Six raters were trained to use the criteria for analysis of the teacher's lessons until they reached .80 interrater reliability. The raters rated one-third of the transcripts independently and then, in pairs, agreed upon the final rating. Again, twenty-five percent of the transcripts were randomly drawn and checked for adherence to the criteria. Ratings for explicitness could range from zero to twenty-two.

All ratings were done without raters knowing in which group the teachers or students were.

Scores for student reading achievement were derived from the pre- and post-tests of the Gates-McGinitie Reading tests. In addition, scores on teachers' management were obtained for each observation and were used to categorize teachers as high, medium, or low managers.

Methods of Analyses

T-test of differences were computed on the treatment and control group teachers for explicitness, management, and student awareness at each point in time (i.e., each observation). Student awareness, covaried by their baseline awareness rating, was the dependent measure for a MANOVA and a nested MANOVA with a repeated measures design. This 2 x 3 way analysis of variance had as its independent variables (1) treatment level and (2) management levels (high/medium/low). Pearson-product moment correlations were used to compute (1) the relationship between teacher explicitness and student awareness on the four observations on which students awareness data was available, and (2) the relationship between teacher explicitness and teacher management for each of the five observations.

Results

Teacher Explicitness

Teachers in the treatment and control groups did not differ initially in their use of explicit explanation ($t=0$; $df=18$; $p > .05$). Teachers who were trained to use the explicit explanation model were significantly different from those in the control group in their use of explanation after the first training session ($t=3.46$; $df=20$; $p < .05$). Treatment teachers included significantly more explicit explanation in the lessons after each training and increased in their use of explanation from observations one through four. The mean ratings of explicit explanation for treatment teachers ranged from 4.1 at the beginning

(SD=5.216) to a high of 17.09 at the fourth observation (SD=2.166). The mean ratings of explicit explanation for control group teachers ranged from 4.1 at the beginning (SD=4.725) to a high of 6.09 at the fourth observation (SD=3.833). Although treatment teachers decreased in their explicitness of explanation at time five, this decrease was not significant. The t-test analyses revealed a significant difference between the mean explicitness scores of the treatment teachers and the mean explicitness scores of the control teachers on the second through the fifth observations. At the end of the study (observation five) the differences between treatment and control group teachers was as follows: ($t=4.01$; $df=20$; $p < .05$).

A nested MANOVA with repeated measures design showed an interaction effect with high managers exhibiting greater explicitness within each treatment group [$F(1,14)=6.279$, $p < .05$). Also, across time, teachers in the treatment condition became more explicit in their explanation [$F(1,14) = 34.02$, $p < .05$].

A Pearson product moment correlation showed a significant relationship of teacher explicitness and management ratings at the third ($r=.45$) and fifth observation ($r=.57$), such that the more explicit the explanation, the higher the management level. Management data was not available for the fourth observation. T-tests revealed no significant difference in management ratings of treatment and control teachers at each point in time.

Student Awareness

Students in the treatment and control groups were first interviewed after the second observation, thus after the first training session. Therefore baseline data on initial student awareness (i.e., time one) was not available. A t-test revealed a significant difference between the students in the control and treatment conditions at each point in time. Due to the initial differences in student awareness, analysis of covariance was used in all subsequent analyses of variance.

Student awareness on the fifth observation, when covaried by their initial awareness rating, was the dependent measure for a 2 x 3 nested design MANCOVA. This analysis included two independent variables: (1) treatment level of teachers, and (2) management level (high/medium/low). Students of teachers in the treatment group were significantly more aware on the fifth observation than students of teachers in the control group. The "F" value associated with the difference between control and treatment teachers is [$F(1,14) = 6.48$, $p < .05$].

A repeated measures MANOVA indicated a significant main effect of treatment on student awareness [$F(1,15) = 7.872$, $p < .05$]. Thus, hypothesis one, that students of teachers who are trained to use explicit explanation will have more metacognitive awareness than students of teachers who did not receive training, was supported by the data.

In addition, hypothesis two, that there is a direct positive relationship between teacher explicit explanation and student metacognitive awareness, was supported. Pearson product moment correlations were as follows: at observation two, $r = .43$, $p < .05$; observation three, $r = .61$, $p < .05$; observation four, $r = .45$, $p < .05$; and observation five, $r = .62$, $p < .05$. Thus student awareness was significantly positively related to teacher explanation at each point in time.

Discussion

This study supports the hypotheses that (1) students of teachers trained to use explicit explanation are more aware of what they have been taught than students of teachers who are not similarly trained, and (2) there is a significant positive relationship between explicit explanation and metacognitive awareness. In addition, the data provide evidence that teachers who were trained to use the explanation model became more explicit over time. Those who became more explicit also increased in their management of the class.

After receiving training in the explanation model, treatment teachers were significantly more explicit in their use of explanation behavior than control teachers, thus providing evidence that teachers can be trained in the use of the explanation model. Teachers' reactions to the explanation model differed in that some reported using the model regularly, even in reading groups and other content areas. Others indicated they had difficulty using the model and used it only when they were observed for the study. Since regular implementation of the model is a goal of the project, more thorough training and monitoring of teachers' use of the model is systematically included in 1983-84 phase of the research project.

The interviews with the teachers and careful analysis of the transcripts of the lessons revealed complexities in implementing all of the model. Teachers seemed most able to introduce the what, why, and how of the lesson and modeled the process fairly well. However, the teachers need additional work on (1) developing the interactive phases of the lesson, (2) making transitions from their presentation of the lesson to the interactive phase, (3) developing analytic, not mechanical explanations, and (4) creating units which build over time. Analysis of teachers' difficulties in using the model provides the basis for improved training in the next phase of the project.

Students in the low reading groups of treatment teachers were significantly more aware of the reading skills they had been taught than students in the low reading groups of the control teachers. The difference in students' ability to articulate what was taught, how they would use the skill, and why the skill is important became more pronounced throughout the study. As teachers became more explicit in their explanation, students' ratings of awareness increased. The establishment of the relationship of teacher's explicit explanation and students' awareness is important since these low reading students lack strategies

to problem solve in the reading context. The ability of these students to identify how they would approach the problems of reading in "real" contexts and to know when they could expect to use these skills is a crucial first step in their development as able readers, and, specifically, improving students' reading achievement. Indeed, the goals of the 1983-84 study are (1) to train teachers to use the explanation model and to monitor their constant use of it in teaching reading skills and (2) demonstrate increased student achievement in reading on (a) criterion-referenced tests specifically related to the skills taught and (b) the Stanford Achievement Test.

The management level of teachers was assessed in this study because it was expected that management of the classroom could interfere with the use of explicit explanation. Teachers with high, medium, and low management ratings were randomly assigned to treatment and control conditions. T-tests revealed no significant difference in management ratings of treatment and control teachers over time. However, the treatment teachers improved in their management, while control teachers demonstrated no change in their management levels. A Pearson product moment correlation showed a significant relationship of teacher explicitness and management rating at the third and fifth observations (management data was not available for the fourth observation), such that the more explicit the explanation, the higher the management rating. Thus, it appears that teachers who became more skillful at using explicit explanation also improved in their management of the class. However, in spite of this improvement, the treatment teachers were not significantly better managers than teachers in the control group.

The implications of this study are apparent for instruction in most content areas although specifically applied to reading instruction. The method of providing explicit explanation about what is taught, how to do the task, and why it is important is applicable to the teaching of any skill, especially when transfer to another "real" situation is desired. The interaction phase in

which the teacher assesses students' understanding of the principles and corrects misunderstandings, while moving students to independent thinking, is an instructional skill which can be developed and seems to be important to student awareness. The goal of providing students with practice in using the skill taught and then requiring use of the skill in a "real" context is a method which frequently is not employed. The value of using all of the explanation model in improving students' awareness is supported in the instruction of reading and should be evaluated in other content areas.

The relationship of the explicitness of teachers' explanation to students' awareness of what was taught has been established in the 1982-83 research. The relationships of explanation behavior and student awareness to student achievement have yet to be demonstrated. In addition, the researchers intend to better describe the qualitative nature of explanation and the best way to deliver staff development in this technique in the on-going research project.

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Appendix A

Criteria for Evaluating Instructional Communication

CRITERIA FOR EVALUATING INSTRUCTIONAL COMMUNICATION

I. LESSON INTRODUCTION

DOES THE TEACHER COMMUNICATE WHAT IS TO BE LEARNED?

DOES THE TEACHER COMMUNICATE WHY IT IS IMPORTANT?

DOES THE TEACHER EXPLICITLY SURFACE THE PRINCIPLE WHICH GOVERNS THE OPERATION OF THE TASK?

DOES THE TEACHER EXPLICITLY POINT OUT FOR PUPILS THE SALIENT FEATURES ONE ATTENDS TO IN ORDER TO DO THE TASK SUCCESSFULLY?

II. MODELING

DOES THE TEACHER MODEL HOW SUCCESSFUL READERS "THINK THROUGH" THE TASK?

IS THE INTERNAL MENTAL PROCESSING MADE VISIBLE FOR THE PUPIL?

DOES THE MODELING REFLECT THE UNDERGIRDING PRINCIPLE AND HOW THE SALIENT FEATURES ARE USED?

III. LESSON PROGRESSION

DOES THE LESSON FOLLOW A SIMPLE TO COMPLEX PROGRESSION?

DOES THE TEACHER PROVIDE CUES AND/OR HIGHLIGHTING REGARDING THE SALIENT FEATURES NOTED IN THE LESSON INTRODUCTION?

ARE THE CUES PROVIDED BY THE TEACHER GRADUALLY DIMINISHED AS THE LESSON PROGRESSES?

IV. LESSON REVIEW

DOES THE TEACHER INCLUDE IN THE REVIEW AN ASSESSMENT OF WHETHER PUPILS ARE CONSCIOUSLY AWARE OF
--WHAT WAS TAUGHT
--WHY IT WAS TAUGHT
--HOW TO THINK ONE'S WAY THROUGH IT

V. PRACTICE

DOES THE TEACHER INCLUDE PRACTICE ACTIVITIES WHICH
--PRACTICE THE SAME TASK AS THE ONE TAUGHT?
--ASK THE CHILD TO USE WHAT WAS TAUGHT IN CONNECTED TEXT?

Appendix B

Conventions for Data Analysis

FINAL DRAFT

CONVENTIONS FOR DATA ANALYSIS
TEACHER EXPLANATION STUDY

July 16, 1982

1. Plot and graph all lesson segments.

   a. Divide the lesson into descriptive parts and label. Use the patterns in the "Instructional Communication Strategy" as labels whenever they are appropriate.

   b. Refer to the time notations in observer's field notes. Use these time notations to assign times to the various parts of the lesson.

   c. Count the number of lines in each segment of teacher talk. Note number of lines in pencil at margin.

   d. Make a "Teacher Talk Graph" which describes the teacher talk pattern for the segment you are analyzing.

   e. Label each vertical of teacher talk which exceeds three lines. Use the language of the "Instructional Communication Strategy" to label the verticals. If none of that language is appropriate, invent a label which seems descriptive of what the teacher is doing.

   f. Repeat the same process for pupils. Count the lines of pupil talk, make a "Pupil Talk Graph" and label the verticals in the graph.

2. Rate teacher explanation only for those lesson segments which are intended to develop in pupils an understanding of how to make sense out of the reading process.

3. Intended outcomes should be determined by the teacher's answer to the interview questions about lesson objectives and outcomes.

4. When a lesson has multiple objectives, rate explanation only for the part(s) designed to help kids make sense out of the reading process. If the intent was something else (such as accumulating knowledge at a recognition level, for instance), the explanation does not qualify as teacher explanation as defined in this study and the rating should not be used in answering the research question.

5. Do not rate explanation based on what you believe is implied by the teacher. Rate on the basis of explicit evidence only.

6. When in doubt about a rating, go with your first judgment.

7. Make note of any inaccurate explanation.

8. Rating Teacher Explanation

The rating of teacher explanation is broken into two parts. The first includes five criteria which focus on the clarity and consistency with which the teacher explains the knowledge about how to do the mental processing. The second includes six criteria which focus on the means by which the teacher explained the mental processing. The criteria for teacher explanation follow:

Part I: The Knowledge Presented About How To Do The Mental Process

1. Rate the clarity and consistency of the teacher's talk throughout the lesson regarding the knowledge presented about what the mental process is (focusing not on the noun--"main ideas"--but on the verb associated with the mental processing--"identify the main idea"). Note (1) the use of transitions from one part of the lesson to another (2) the logical and clear presentation of the steps within each lesson part and (3) the avoidance on non-essential topics and/or discussion throughout the lesson.

   0 -- the explanation of the mental process is unorganized and/or unclear (it is hard to tell what mental process the teacher is teaching).

   1 -- the mental process can be discerned despite distractors, even if it is implicit.

   2 -- the explanation is clear and the organization assists the learner in following the key points.

2. Rate the clarity and consistency of what the teacher says about why the mental process would be useful in connected text.

   0 -- there is no explanation of why the mental process would be useful in connected text.

   1 -- reasons for use of the mental process in connected text are unclearly and/or inconsistently stated or merely implied.

   2 -- reasons for use of the process in connected text are clearly and explicitly stated without contradiction.

3. Rate the clarity and consistency of the teacher's talk throughout the lesson regarding the salient features of the task and how one uses these salient features to do the mental processing.

   0 -- there is no evidence of teacher talk about the salient features of the task or how these are used to do the mental processing

1 -- the teacher talks about the salient features and their use in doing the mental processing but the explanation is incomplete, unclear or merely implied.

2 -- the teacher's talk about the salient features and how one uses them to do the mental processing is clearly and explicitly stated with contradiction.

4. Rate the clarity and consistency of the teacher's talk throughout the lesson regarding the sequence for approaching and fulfilling the mental processing.

0 -- there is no teacher talk about the sequence one follows when doing the mental processing.

1 -- the teacher talks about a sequence to be followed but the explanation is incomplete, unclear or merely implied.

2 -- the teacher's talk about the sequence to follow in doing the mental processing is clearly and explicitly stated without contradiction.

5. Rate the clarity and consistency of the teacher talk which results in an example of how to do the mental processing.

0 -- no example of how to do the mental processing is provided or elicited.

1 -- an example of how to do the mental processing is provided (or elicited) but it is incomplete, unclear or the process is merely implied.

2 -- a clear, explicit and consistent example of how to do the mental processing is provided (or elicited).

Part II: The Means By Which The Teacher Explained The Mental Processing

1. Rate the degree to which the teacher modeled the mental processing.

0 -- there is no evidence of teacher modeling the mental processing.

1 -- there is some evidence of teacher modeling the mental processing.

2 -- the teacher clearly did model the mental processing.

2. Rate the extent to which the teacher directs students' attention to the salient features of the mental processing task (by providing highlights, cues, etc.).

0 -- no evidence of highlighting or cues.

1 -- highlighting or cueing, while sometimes evident, is not explicit enough to insure student attention.

2 -- explicit highlighting or cues are provided to direct student attention to salient features of the mental processing.

3. Rate what the teacher says to pupils about their responses during the lesson, noting whether the teacher's feedback (1) consistently helps children focus on the mental processing by cueing and other devices and (2) helps them re-focus their attention by elaborating when confusion does arise.

0 -- the teacher's feedback to pupils is confined to correctness criteria or to concerns about activity flow; there is little evidence of appropriate response to pupils, or responses are confusing.

1 -- teacher's feedback to pupils include the intention to focus (or re-focus) children but is not explicit enough or consistent enough to insure student attention.

2 -- teacher feedback to pupils is appropriate in helping pupils focus on the salient features of the mental processing and, when confusion arises, the teacher re-focuses attention through appropriate elaboration.

4. Rate the extent to which the teacher reviews with students what mental process is being taught, its use in connected text and how to do it.

0 -- the teacher provides no review.

1 -- the teacher's review is incomplete (does not include what and why and how) or is not explicit.

2 -- the teacher provides explicit review of all three points.

5. Rate the appropriateness of the individual practice provided by the teacher to give children an opportunity to repetively respond with the mental processing in a controlled sample (workbook page, ditto sheet, etc.)

0 -- the teacher does not provide practice or it is not appropriate to the mental processing.

1 -- the teacher provides practice but it is only partly relevant and/or appropriate for the mental processing.

2 -- the practice provided by the teacher calls for repeated opportunity to use the mental processing.

6. Rate the degree to which the teacher helps students apply the mental processing in teacher selected examples of connected text (i.e., basal text stories).

   0 -- the teacher does not explicitly help students apply the mental processing in the reading group.

   1 -- the teacher attempts to help students apply the mental processing to stories read in the group but such help is not as clear as it could be.

   2 -- the teacher provides explicit help to students in applying the mental processing to stories read in the reading group.

9. Rating Pupil Awareness

To rate pupil awareness, use what the teacher said during the post-lesson interview and during the lesson as the criterion for examining pupil responses to the questions about what was taught, why it was taught and how to do it. This means that, if the teacher provides inaccurate information, the student is rated on his/her response to this information as presented. Determine the pupil awareness by judging pupil response to the question and all subsequent elaborating probes which the researcher may have used in conjunction with the question. The criteria for pupil awareness follow.

1. To highly rate a student's response to the "what," it must include a specific reference to the language task and an example:

   0 -- No awareness (student does not know, is inaccurate or supplies a response that does not make sense).

   1 -- The response is a non-specific reference to the language task ("We are learning about words").

   2 -- The response refers to the name of the specific language task ("We are learning ou words").

   3 -- The response demonstrates some metacognitive understanding of what is being learned ("We are learning to sound out ou words").

   4 -- The response includes the above and an example ("We are learning to sound out ou words, like in out").

2. To highly rate a student's response to the "why," it must specify both the context in which it will be useful and what he/she is able to do in that context:

   0 -- No awareness or non-specific to language ("I'll get smarter").

1 -- The response is non-specific to the language task but related to language generally (I'll read better").

2 -- The response refers to the language task but in a non-specific or non-metacognitive manner ("I can decode words better").

3 -- The response indicates a metacognitive understanding of what he/she will be able to do but not the context ("I can sound out ou words").

OR

specifies the context but not an understanding of what he/she will be able to do ("I can use this when I come upon an unknown word in my book").

4 -- The response includes both an understanding of what he/she will be able to do and the context in which it is useful ("When I come upon an unknown ou word in my library book. I'll be able to sound it out").

3. To highly rate a student's response to the "how," it must include an example of how one does the mental processing associated with successful completion of the task:

0 -- No awareness

1 -- The response is not specific to the language task (I'll sound the word out")

OR

is merely an example that does not illustrate conscious understanding of the language task ("loud").

2 -- The response demonstrates only an understanding of the salient features of the language task but no metacognitive understanding of the mental processing ("I say, 'l-ou-d'").

3 -- The response identifies the salient features of the language task and some understanding of the mental processing ("If I see a word that has ou in it, I say the sound of ou").

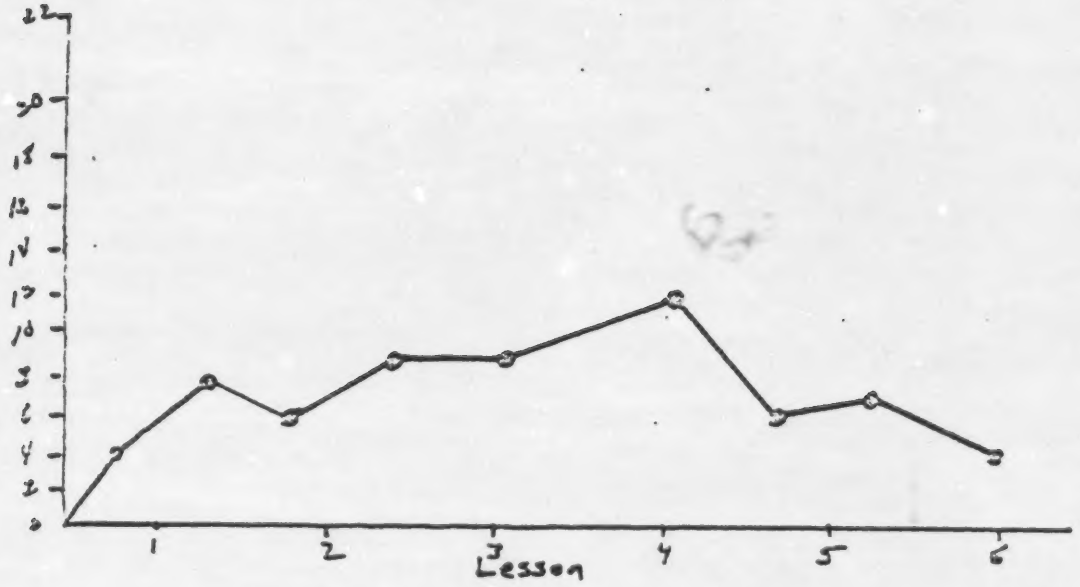
4 -- The response includes a specific example of the mental processing (when I meet an unknown word such as loud, I think first .... and then .... etc.).

Appendix C

Ratings of
Graphs Showing Explicitness of
Explanation and Student Awareness
for Four Teachers in Pilot Study

Teacher A

Explicitness of Explanation



Student Awareness

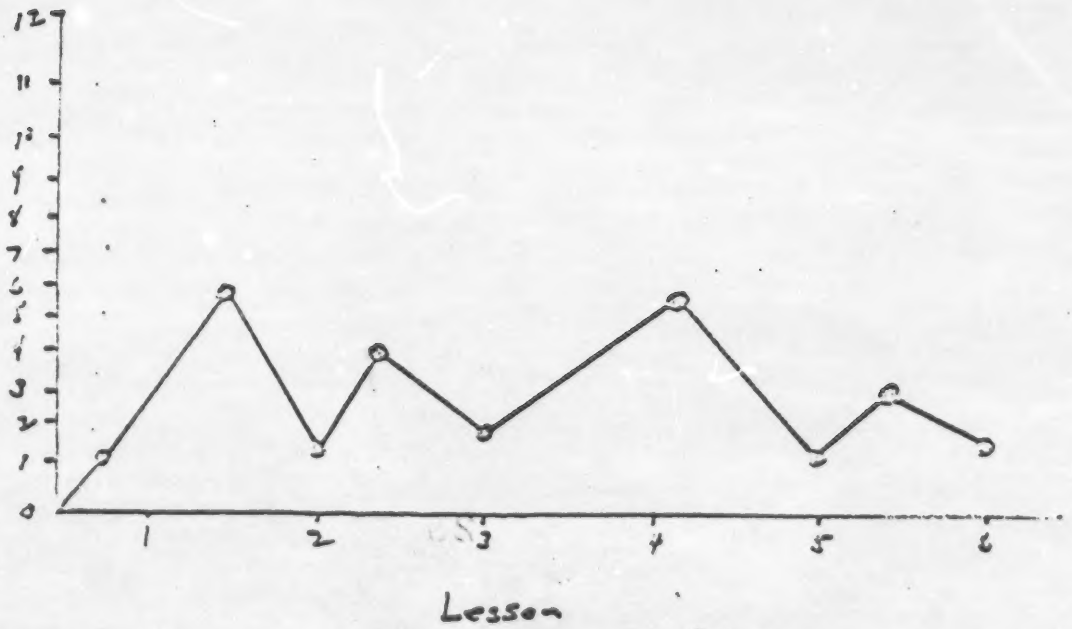
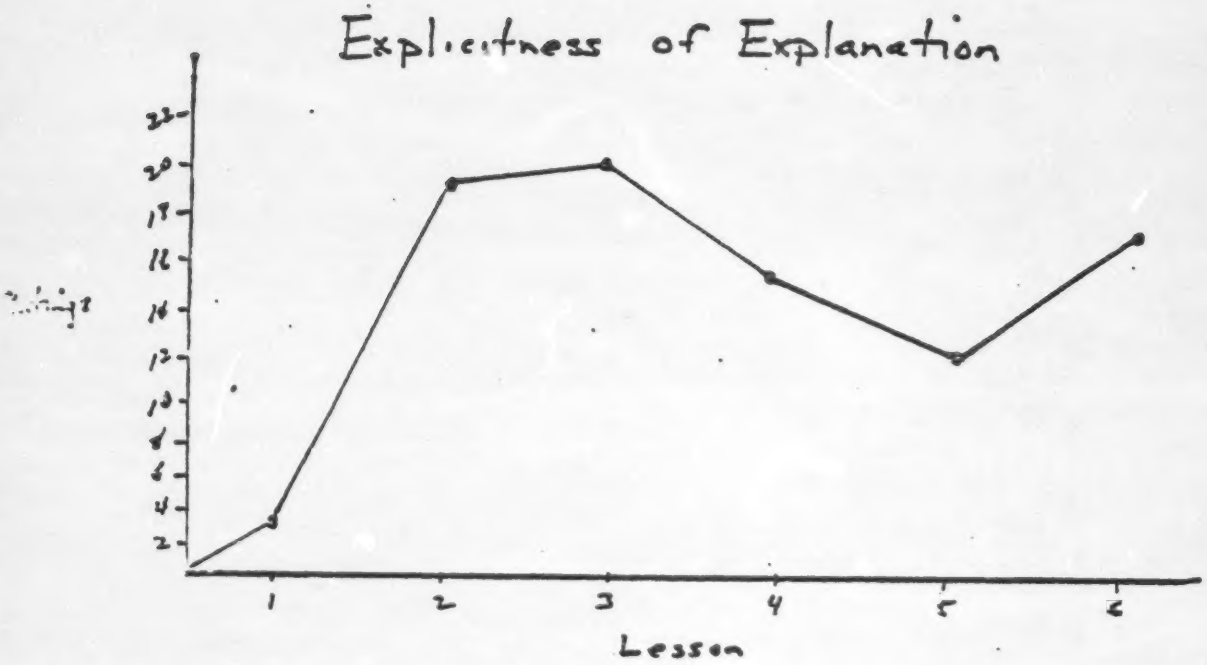


Figure 1

Teacher B



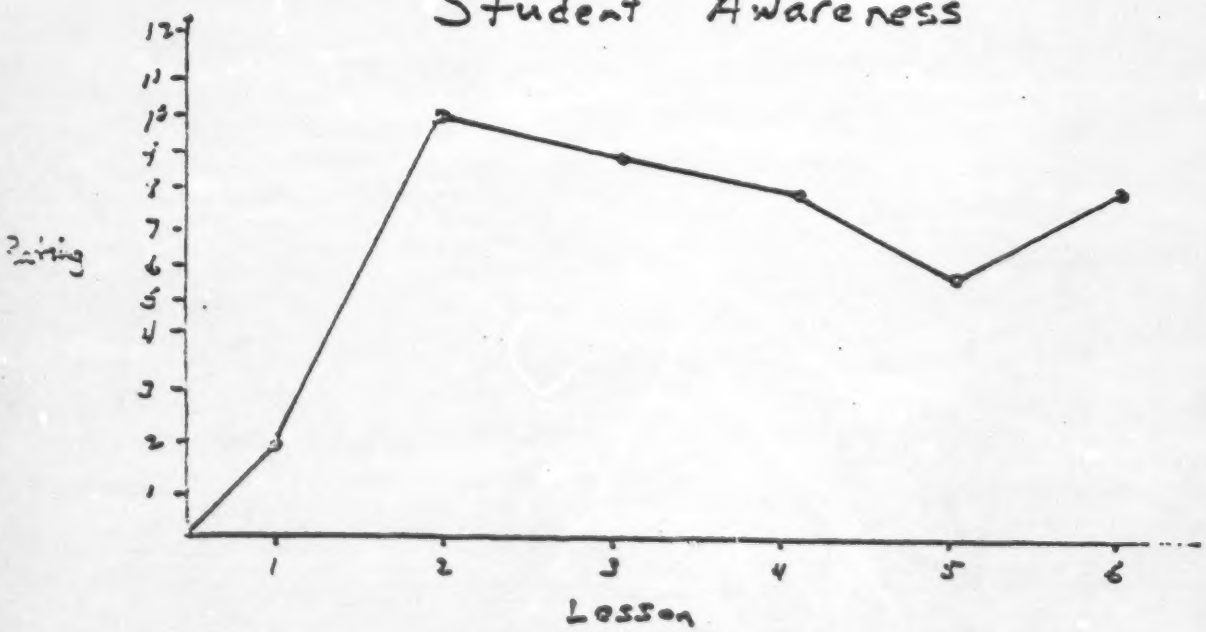
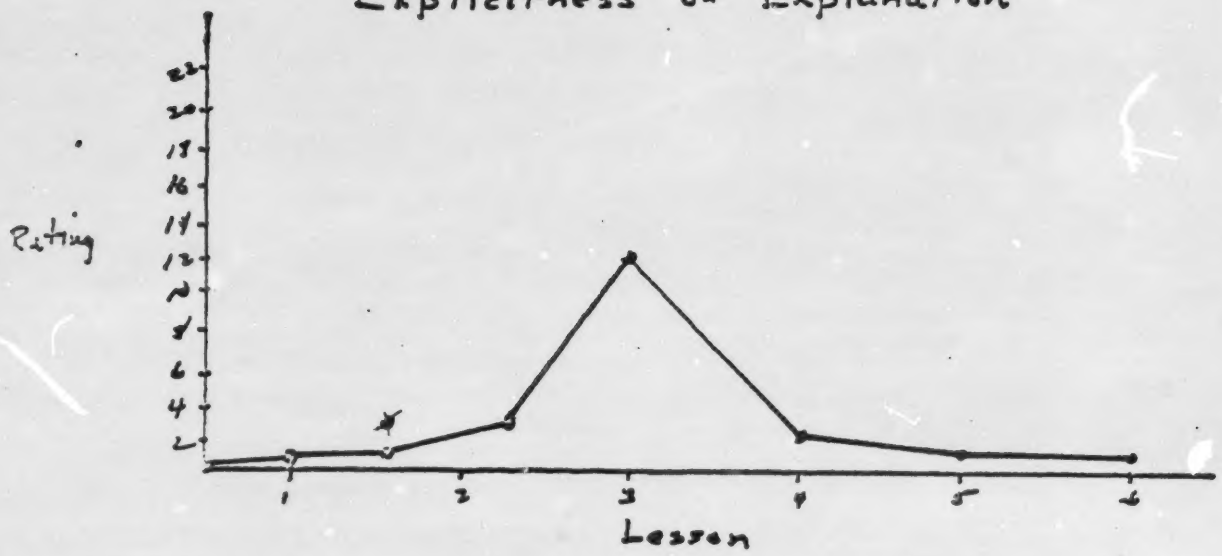


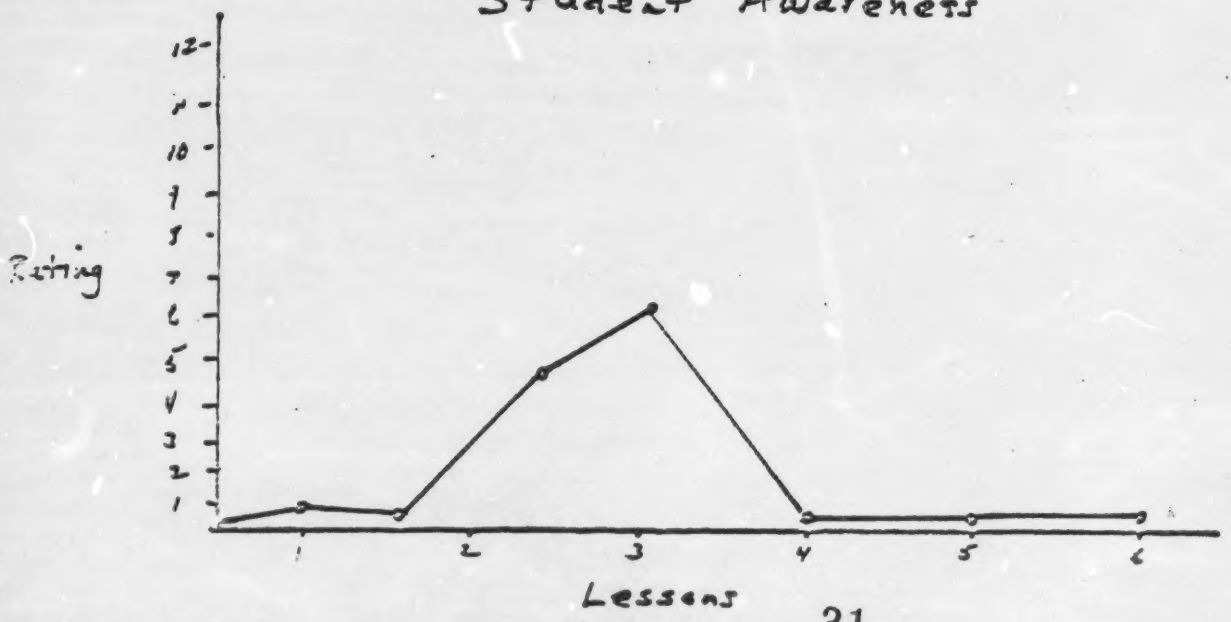
Figure 2

Teacher C

Explicitness of Explanation

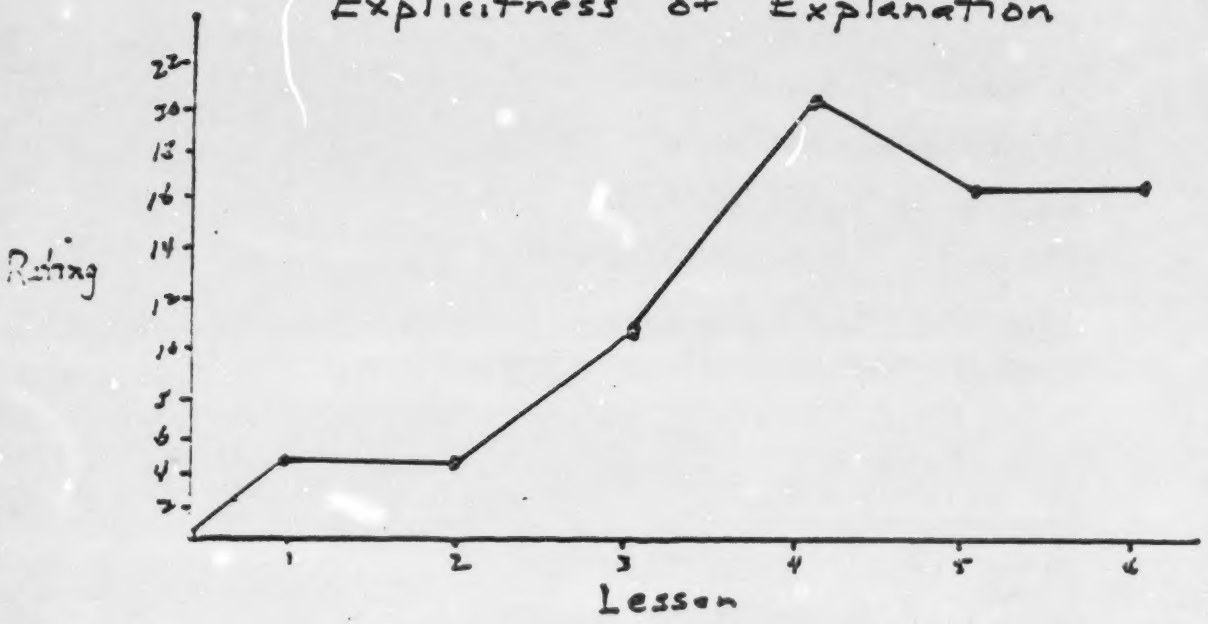


Student Awareness

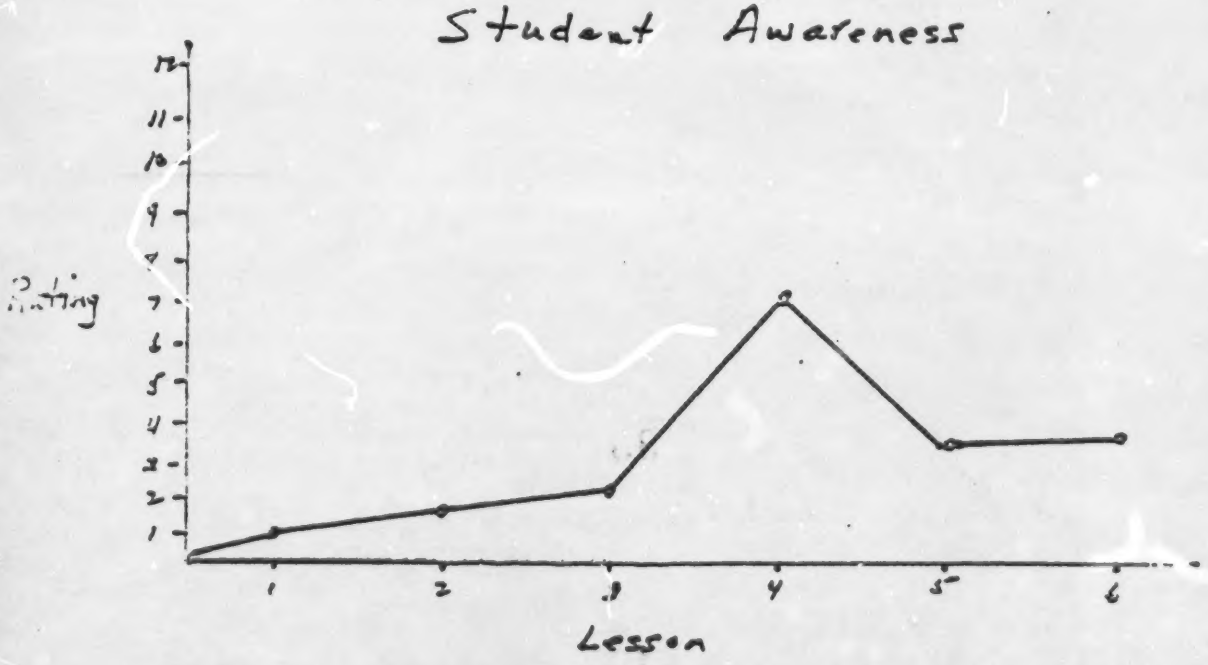


Teacher D

Explicitness of Explanation



Student Awareness



Appendix D

Management Observation Form

No. of students in class ___ (Whole class activity)
No. of students in reading group(s) (1___2___3___)
in rest of class_____

Observer code_____
Classroom code_____

I. Whole Class ___ Reading Group

	Time	On	Off	Can't Tell
1				
2				
3				
4				
5				
6				

	Time	On	Off	Can't Tell
1				
2				
3				
4				
5				
6				

Ob. time start_____
Ob. time end _____
List interferences_____
& # of min._____

Nonverbal Interactions (Tally)			Verbal Interactions (Tally)		
Physically restrains	Reading Group	Whole Class	Call name out of lesson context	Reading Group	Whole Class
Physically punishes			Tells student to stop inappropriate behavior		
Brief Silent waiting			Tells student appropriate behavior		
Prolonged silent writing			Uses positive comments to control students		
Brief glare at Student			Cites rules or Procedures		
Long glare at student			Threatens Student		
Signal Interferences			Warns Student		
Proximity-relationship control			Stops lesson (more than 3 sec.)		
Takes object from student			Stops Lessons and removes student		
Others			Rebukes student for not participating		
			Shouts for order		
			Whining Tones		
			Voice Squeaks		

Environment and Materials: ____ not observed

___ 1. Teacher & pupil space defined and used appropriately
___ 2. Some errors in use of space materials, equipment
___ 3. Materials not ready, traffic pattern problems, teacher unable to monitor room, environment detracts from smooth functioning

Supporting data

Organization and Clarity of Instruction ____ not observed

___ 1. Students at various levels clear about directions, tasks, outcomes
___ 2. Some students unclear about directions, task, outcomes
___ 3. Evidence of lack of student clarity about directions, tasks, outcomes

Supporting data

Rules and Procedures

___ 1. Pupils efficiently carry out routines and procedures
___ 2. Mixed efficient use of routines
___ 3. Pupils do not use routines and procedures

Supporting data

Consequences to Pupils ____ not observed

___ 1. Reward/deterent system focused on positive
___ 2. Reward and deterent pattern not observable
___ 3. Reward/deterent system used and heavy punishment

Supporting data

Monitoring ____ not observed

___ 1. Teacher monitored class and responded to cues of future problems

___ 2. Teacher unsystematically monitored class and unsystematically responded to problem and cues

___ 3. Teacher responded to problems not to cues of problems

Supporting data

Student Accountability

___ 1. Time and product identified

___ 2. Time product communication not adhered to

___ 3. No product and vague time

Supporting data